

## MEMORANDUM FOR RECORD

SUBJECT: Joint Inspection of Grassy Island Dredge Disposal Facility located in the Detroit River near Wyandotte, Michigan

1. **PURPOSE:** The purpose of visually inspecting the perimeter +6' dikes, +20' interior dikes, and the weir is to determine if there are any physical conditions that would compromise the current dike wall's integrity or weir structure as well as demonstrate dike inspection procedures to the U.S. Fish and Wildlife Service so that they may conduct their own inspection of the site. Specific objectives included:
  - Determine if the amount of vegetation growing on the dike walls may compromise the dikes
  - Identify if there is evidence of erosion or sloughing of dike walls
  - Identify if there is evidence of settlement of the dike walls
  - Determine if debris and sediment accumulation are affecting weir function
2. **PROJECT DESCRIPTION:** The Corps built the first perimeter dikes around an existing shoal area known as Grassy Island in 1960. In 1972, a second, interior, dike was built by the Corps to increase disposal capacity. According to our records the last placement of dredge material was in 1982. During our inspection we observed the following: Overgrowth of vegetation and trees on the island. A weir located on the north end of the island was functioning normally and pond water was able to drain. A corrugated metal structure on the south end of the island was filled with concrete and was not a functional weir. The majority of the island appeared to be dredged material placed by a hydraulic pipeline, but evidence showed that there was debris such as; bricks, concrete, wire cable, and stones that may have been off loaded by mechanical equipment. Two dikes surrounded the entire island. The first dike was built of riprap stones placed on the shoreline and a second dike runs parallel and a few yards inland is larger and appear to be built of earth material.
3. **ATTENDEES:**

NAME	REPRESENTING	PHONE NUMBER
Gary Segrest	USACE-Detroit	(313) 226-2215
Jihad Safa	USACE -Detroit	(313) 226-6783
Ken Zmikly	USACE-Detroit Area Office	(313) 226-1316
Rich Sallans	USACE-Detroit Area Office	(313) 226-1310
Stephanie Millsap	US Fish & Wildlife, Grosse Ile, MI.	(734) 692-7628
Steve Dushane	US Fish & Wildlife, Grosse Ile, MI.	(734) 692-7604

4. **SITE CONDITIONS:** The inspection was performed on Wednesday 17 May 2006. The temperature throughout the day was around 75 degrees Fahrenheit with partly cloudy sky throughout the day.
5. **INSPECTION PROCEDURE:** The inspection began at the steel sheet pile dock, by the navigational aid, on the east side of the island. We walked around the perimeter of the island along the outer and inner dikes. We periodically entered the interior where there was evidence of cross dikes built. A visual inspection also of the exterior dikes was completed by water. Photographs were taken during the site inspection and are attached to this report.
6. **SUMMARY OF OBSERVATIONS:**
  - a.) Many large trees growing on the outside dike risked the integrity of the dike.
  - b.) Holes in the dike caused by animals burrowing needed to be filled.
  - c.) The condition of the north weir was good, except skimmers might be needed to be attached to prevent debris from entering the weir.
  - d.) Some ponds of water noticed between exterior and interior dikes.
  - e.) The interior dike often had a slope of approximately 1:1, instead of 2:1 as indicated in the engineering plans. The top of the interior dike was narrower in many sections than the 10' width called for in the engineering plans.
7. **EVALUATIONS:** The visual inspection performed only provides information regarding if there are physical conditions existing at the site that would have an adverse impact on the structural integrity of the dike walls and the weir. This visual inspection is not able to determine the physical composition of the dike walls, dike wall porosity, or other geotechnical properties. Evaluations based on observations are provided below:
  - a.) The overall condition of the dikes appeared good, but the interior dike was observed to have areas in which it was eroded to a narrow barrier, in some places it was as narrow as approximately 1' in width. However, additional testing is necessary if any significant changes are going to be made to the structure (e.g. placement of additional fill material or a cap).
  - b.) Many trees grew between the two dikes surrounding the island.
  - c.) The outfall structure on the north end of the island was working. The south end of the island had a structure resembling a weir but it was filled with concrete and not functional.
  - d.) Debris noted on the west side of the island appeared to indicate that the height of the outer dike did not prevent floating debris from washing onto the island or carried in on ice.
  - e.) Ponded water noticed between exterior and interior dikes due to heavy rainfall

in the area during the previous week.

- f.) The interior dike exhibited deviations from the engineering plans regarding dike top width and slope. It is unknown if these deviations are a result of erosion, settling, or that the builders deviated from the engineering plans. The FWS requested as-built drawings of the inside 20' dike, if they were ever prepared by the Corps. None have been located by the Engineering Design and construction Office.
8. **RECOMMENDATIONS:** Based on the above observations it is concluded that the project is structurally stable, safe, and operationally adequate. However, structural testing would be necessary if any significant changes are to made to the structure (e.g. placement of additional fill material or a cap). It is recommended that the overgrowth of trees, greater than 18" in diameter, on the dikes be cut. In addition, the debris floated on the island indicates that the smaller riprap stones along the western end of the island may not be adequately protecting the island from erosion. To prevent embankment failure of the narrow earth built second perimeter dike, there should be more material placed on this dike. This inspection was to instruct the personnel of the U.S. Fish & Wildlife Service to conduct their own inspections. The responsibility of maintaining the island belongs to the U.S. Fish & Wildlife Service. It is recommended that they do future inspections.

Jihad Safa  
Geotech & Structural Design Branch

Enclosures

1. Photos 1 – 20
2. Checklist



17 May 06  
 Photo: 1 - View from boat  
 of Grassy Island



17 May 06  
 Photo: 2 - Begin of  
 inspection  
 at the steel sheet pile dock,  
 by the navigational aid, on  
 the east side of the island



17 May 06  
 Photo: 3 - Large Trees  
 On bank of Interior  
 Dike



17 May 06  
 Photo: 4 - Trees & vegetation  
 Growth on bank of  
 Interior Dike



17 May 06  
 Photo: 5 - Monitoring Well  
 On bank Of interior  
 dike



17 May 06  
 Photo: 6 - Trees on bank  
 of exterior riprap  
 dike



17 May 06  
 Photo: 7 - Wet area between  
 Interior and exterior  
 dikes



17 May 06  
 Photo: 8 - Extensive trees  
 on bank of interior  
 dike



17 May 06  
Photo: 9 Weir Structure



17 May 06  
Photo: 10 - Inside Weir Structure



17 May 06  
Photo: 11 - View of top of interior dike



17 May 06  
Photo: 12-Cross Dike



17 May 06

Photo: 13 - Large trees growth  
on bank of exterior  
dike



17 May 06

Photo: 14 - Large utility pole  
Buried in interior  
dike bank



17 May 06

Photo: 15 - Top of Narrow  
Interior Dike



17 May 06

Photo: 16 - Abandoned concrete  
filled structure



17 May 06

Photo: 17 - Tall grass between  
Interior and exterior  
dikes



17 May 06

Photo: 18 - Burrow hole  
between interior  
and exterior dikes



17 May 06

Photo 19 - Drainage ditch along  
toe of interior dike



Photo: 20 - End of Inspection  
at the steel sheet pile ,  
by the navigational aid,  
east side of the island  
dock